

A substitute specification has been required. Accordingly, a substitute specification is being prepared and will be filed shortly.

Claim 1 was rejected under 35 U.S.C. § 112, second paragraph. In response, Claim 1 has been carefully reviewed and amended to address the points raised in the Office Action. Accordingly, reconsideration and withdrawal of the § 112 rejection are respectfully requested.

Claims 1 to 8 were rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 5,492,142 (Sano). The rejection is respectfully traversed.

The invention concerns a silicon-based film comprising a crystal phase which is formed on a substrate. The substrate has a surface shape represented by a function  $f$ . The surface shape has a standard deviation of an inclination  $\arctan(df/dx)$  from  $15^\circ$  to  $55^\circ$  within the range of sampling length  $dx$  from 20 nm to 100 nm. A Raman scattering strength resulting from an amorphous component in the silicon-based film is not more than a Raman scattering strength resulting from a crystalline component in the silicon-based film. A difference between a spacing in a direction parallel to a principle surface of the substrate and a spacing of single crystal silicon is within the range of 0.2 % to 1.0 % with regard to the spacing of the single crystal silicon.

The Office Action concedes that Sano fails to explicitly disclose the parameters of surface shape, Raman scattering, and spacing as set forth in the present invention. However, the Office Action asserts that these features are inherent in Sano. Applicants respectfully disagree.

According to MPEP § 2112, the fact that a certain result or characteristic may be present in the prior art is insufficient to establish inherency. To establish

inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in that which is being described in the reference.

While Sano may be interpreted as disclosing a silicon-based film comprising a crystal phase formed on a substrate with a texture shape, it does not necessarily follow that the surface shape (represented by a function  $f$ ) has a standard deviation of an inclination  $\arctan(df/dx)$  from  $15^\circ$  to  $55^\circ$  within the range of sampling length  $dx$  from 20 nm to 100 nm, a Raman scattering strength resulting from an amorphous component in the silicon-based film is not more than a Raman scattering strength resulting from a crystalline component in the silicon-based film, and a difference between a spacing in a direction parallel to a principle surface of the substrate and a spacing of single crystal silicon is within the range of 0.2 % to 1.0 % with regard to the spacing of the single crystal silicon. Other arrangements are possible and are believed to be contemplated by Sano. Accordingly, since other arrangements are possible, it is improper to conclude that missing features are “necessarily present” in Sano, and it is consequently improper to sustain a rejection based on inherency.

Accordingly, if the rejection over Sano is maintained, it is respectfully requested that the Examiner provide extrinsic evidence which clearly demonstrates that any silicon-based film comprising a crystal phase formed on a textured substrate “necessarily contains” all of the features of the present invention. See *In re Rijckaert*, 28 USPQ2d 1955 (Fed. Cir. 1993, copy enclosed).

Applicants conclude that Sano does not teach or suggest the claimed invention and it is respectfully requested that the Section 103 rejection be withdrawn.

No other matters being raised, it is believed that the entire application is fully in condition for allowance, and such action is courteously solicited.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

  
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Application No.: 09/982,845  
Attorney Docket No.: 03500.015894.

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Amended) A silicon-based film comprising a crystal phase formed on a substrate, said substrate having [with] a surface shape represented by a function  $f$ ,

wherein the [silicon-based film is formed on a substrate with a] surface shape [having] has a standard deviation of an inclination  $\arctan(df/dx)$  from  $15^\circ$  to  $55^\circ$  within the range of a sampling length  $dx$  from 20 nm to 100 nm,

wherein a Raman scattering strength resulting from an amorphous component in the silicon-based film is not more than a Raman scattering strength resulting from a crystalline component in the silicon-based film, and

wherein a difference between a spacing in a direction parallel to a principal surface of the substrate and a spacing of single crystal silicon is within the range of 0.2% to 1.0% with regard to the spacing of the single crystal silicon.

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In re Rijckaert (CA FC) 28 USPQ2d 1955

In re Rijckaert

U.S. Court of Appeals Federal Circuit

28 USPQ2d 1955

Decided November 23, 1993  
No. 93-1206

#### Headnotes

#### PATENTS

##### 1. Patentability/Validity - Obviousness - Relevant prior art - Particular inventions (§ 115.0903.03)

Board of Patent Appeals and Interferences erred by affirming rejection, on grounds of obviousness, of claims for apparatus to record and reproduce electric signal on magnetic record carrier, since references relied upon to reject claims do not provide basis for prima facie determination of obviousness, in that prior art relied upon, either individually or when combined, does not disclose, suggest, or render obvious claimed invention, and since applicant's burden to rebut rejection of obviousness does not arise until prima facie case has been established.

#### Case History and Disposition:

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Application for patent, serial no. 07/345,396, filed by Albert M.A. Rijckaert and Joannes A.E. Van Der Kop. From decision affirming final rejection of claims, applicants appeal. Reversed.

#### Attorneys:

Edward W. Goodman (Algy Tamoshunas, with him on brief), Tarrytown, N.Y., for appellant.

Lee E. Barrett, associate solicitor, PTO (Fred E. McKelvey, solicitor, with him on brief), for appellee.

#### Judge:

Before Lay, senior circuit judge (Eighth Circuit, sitting by designation), and Mayer and Lourie, circuit judges.

#### Opinion Text

Opinion By:  
Lourie, J.

Albert Rijckaert and Joannes van der Kop ("Rijckaert") appeal from the decision of the United States Patent and Trademark Office (PTO) Board of Patent Appeals and Interferences affirming the final rejection of claims 5-12, all of the pending claims in patent application serial no. 07/345,396, as being unpatentable under 35 U.S.C. Section 103 (1988). Because the references relied upon to reject the claims do not provide the basis for a *prima facie* determination that the claimed invention would have been obvious, we reverse.

#### BACKGROUND

The patent application at issue relates to an apparatus for recording and reproducing an electric signal on a magnetic record carrier. Independent claim 11 is drawn to a recording apparatus and it specifies a relationship between time expansion or compression and three variables a, n, and M. Claim 11 reads, in pertinent part:

11. An apparatus for recording an electric signal on a magnetic record carrier in tracks which

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are inclined relative to the longitudinal direction of said record carrier, comprising:

... [a] time-base correction circuit provid [ing] a time expansion or time compression of the signal blocks by a factor of  $a \cdot n / (180^\circ (M+1))$ , where  $a$  is the

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wrapping angle of the record carrier around the head drum and differs from  $180^\circ$  degrees,  $n$  is the number of head pairs, and  $M$  is the number of times within a specific time interval that a head pair which comes in contact with the record carrier during said time interval does not record a signal on the record carrier, said time interval being defined by those instants at which two consecutive track pairs are recorded by one or two head pairs.

Independent claim 12 is drawn to an apparatus for reproducing a recorded signal and it recites the reciprocal relationship between time compression or expansion and the three variables  $a$ ,  $n$ , and  $M$ . Dependent claims 5-10 further limit claims 11 or 12.

The Board upheld the final rejection of claims 5 and 7-12 under 35 U.S.C. Section 103 as being unpatentable over U.S. Patent 4,757,392 to Awamoto in view of Driessen et al., *An Experimental Digital Video Recording System*, CE-32 I.E.E. Transactions on Consumer Electronics 3, Aug. 1986, at 362-70. The Board also upheld the final rejection of claim 6 as being unpatentable over Awamoto and Driessen in view of U.S. Patent 4,542,417 to Ohta.

## DISCUSSION

We review *de novo* the Board's ultimate determination of obviousness. *In re De Blauwe*, 736 F.2d 699, 703, 222 USPQ 191, 195 (Fed. Cir. 1984). Underlying factual inquiries, such as the scope and content of the prior art, differences between the prior art and the claimed invention, and level of ordinary skill in the art are reviewed for clear error. See *In re Caveney*, 761 F.2d 671, 674, 226 USPQ 1, 3 (Fed. Cir. 1985).

In rejecting claims under 35 U.S.C. Section 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant. *Id.* "A *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell*, 991 F.2d 781, 782, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)). If the examiner fails to establish a *prima facie* case, the rejection is improper and will be overturned. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

All of the claims except claim 6 stand rejected under 35 U.S.C. Section 103 as being obvious over Awamoto in view of Driessen. 1 Awamoto, the primary reference, discloses a

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signal processing circuit for a video recording and reproducing apparatus. Awamoto specifically discloses the time expansion of an input signal by a factor of two and the corresponding time compression of an output signal in a manner inverse to that of the time expansion. Further, Awamoto uses two video heads mounted on a rotary drum "of any of a well known video tape loading mechanism such that [the heads] follow parallel tracks skewed relative to the length of video tape." Driessen discloses a recording system using two pairs of heads mounted on piezo-ceramic actuators.

The Board concluded that the subject matter of the claims would have been obvious over Awamoto in view of Driessen, stating that "the time expansion or time compression relationship is satisfied for the expansion of two disclosed [in] Awamoto when a wrapping angle of  $360^\circ$  degrees, one pair of heads and no non-recording intervals are assumed." The Board further asserted that the recognition of the claimed relationship between time expansion/compression and the three variables  $a$ ,  $n$ , and  $M$  is "the mere discovery of a relationship that is applicable to [a] prior art apparatus[ ], and does not [give] rise to a patentable invention." Thus, in affirming the rejection, the Board first assumed that the claim limitation at issue, the relationship between time expansion/compression and the three variables, was somehow "inherent" in the prior art as shown by Awamoto. The Board also assumed specific values for the claimed variables in order to assert that Awamoto's device satisfies the claimed relationship.

[1] Rijckaert argues that the examiner has not established a *prima facie* case of obviousness and that the examiner's assumptions do not constitute the disclosure of prior art. We agree. Awamoto does not disclose the wrapping angle of the record carrier around the head drum or the number of times that a head pair which comes in contact with the record carrier does not record a signal on the record carrier. Nor does Awamoto discuss the claimed relationship of the three

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variables to time expansion/compression. 2 Driessen, the secondary reference, is relied upon only to teach the provision of a pair of write heads having a mechanically rigid coupling to each other and does not remedy the deficiencies of Awamoto. Thus, the prior art relied upon does not disclose, suggest, or render obvious the claimed invention, either individually or when combined.<sup>3</sup>

Awamoto does not describe the use of time expansion and compression as a means of optimally filling tracks, much less suggest that the three variables of the claims are even a factor in determining the amount of time expansion or time compression. Rather, Awamoto is concerned primarily with processing a high-quality broadcast television signal for use in conventional video machinery, and with compensating for errors introduced to such a signal by a transfer circuit. The Commissioner's assertion "that the [analysis discussed in his brief] and Awamoto demonstrate that the relationship was, in fact, well known in the art" is unavailing. While the court appreciates the Commissioner's thorough explanation of the claimed relationship in his brief, the Commissioner's brief is not prior art. The prior art is Awamoto, and

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it does not indicate that the relationship is well known in the art nor does it suggest the claimed relationship. See *In re Yates*, 663 F.2d 1054, 211 USPQ 1149, 1151 (CCPA 1981) (when the PTO asserts that there is an explicit or implicit teaching or suggestion in the prior art, it must indicate where such a teaching or suggestion appears in the reference).

To support the Board's affirmation of the rejection, the Commissioner points out that in the recording art, the exact matching of signal time to recording time is an optimal condition, and that this condition would be met by fulfilling the claimed relationship. While the condition described may be an optimal one, it is not "inherent" in Awamoto. Nor are the means to achieve this optimal condition disclosed by Awamoto, explicitly or implicitly. "The mere fact that a certain thing may result from a given set of circumstances is not sufficient [to establish inherency]." *In re Oelrich*, 666 F.2d 578# 581-82, 212 USPQ 323, 326 (CCPA 1981) (citations omitted) (emphasis added). "That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown." *In re Spormann*, 363 F.2d 444, 448, 150 USPQ 449, 452 (CCPA 1966). Such a retrospective view of inherency is not a substitute for some teaching or suggestion supporting an obviousness rejection. See *In re Newell*, 891 F.2d 899, 901, 13 USPQ2d 1248, 1250 (Fed. Cir. 1989).

Rijckaert also argues that the rejection of dependent claim 6 as being obvious over Awamoto and Driessen in view of Ohta is improper. Ohta discloses an apparatus for compensating for signal loss in a single-head video recorder using a time compression factor of 3/5 (a signal of time period 5/4 is compressed into a track of time period 3/4) so that a signal is recorded completely during the time period that it takes the recording head to scan the magnetic tape. Regarding the Ohta patent, the examiner stated, "Ohta was only relied upon to support the idea that other compression factors are used in the prior art. . . . 4 The relationship between the time expansion/compression and the three variables recited in the claims from which claim 6 depends, which is absent in the combination of Awamoto and Driessen, is not supplied by Ohta. Thus, we agree that the rejection of claim 6 under Section 103 is improper for the reasons set forth above with respect to the other claims."

While the Commissioner criticizes Rijckaert's arguments regarding the Section 103 rejections, the burden to rebut a rejection of obviousness does not arise until a *prima facie* case has been established. In the case before us, it was not.

## CONCLUSION

The decision of the United States Patent and Trademark Office Board of Patent

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Appeals and Interferences affirming the final rejection is reversed.

REVERSED

## Footnotes

Footnote 1. The claims stand or fall together since no separate argument for patentability has been made for each claim.

Footnote 2. The Commissioner admits that other limitations recited in claims 11 and 12 are not found in Awamoto; however, those limitations were not argued before the Board or this court. Thus, we agree with the Commissioner that those limitations are not at issue here.

Footnote 3. The Board also noted that the claims are not "specific" in that they claim the three variables as a "factor" of the expansion or compression time. The Board stated, "claims 11 and 12 fail to say which of expansion time or compression time is factored by the variables, how or when one of the two times is selected based on the variables or how each of the two times is related to the variables." The Board further stated, "the relationship is probably satisfied by any prior art video tape recording and reproducing apparatus that otherwise satisfies the remaining requirements of the claims at bar." While the Board's position implies a possible rejection based upon 35 U.S.C. Section 112, this issue is not before us. In any event, the statement that the relationship is "probably satisfied" by the prior art is speculative and therefore does not establish a *prima facie* case of unpatentability.

Footnote 4. The Board did not specifically address the rejection of claim 6; therefore, claim 6 was considered to be affirmed for the reasons stated by the examiner. See 37 C.F.R. Section 1.196(a) (1993).

- End of Case -